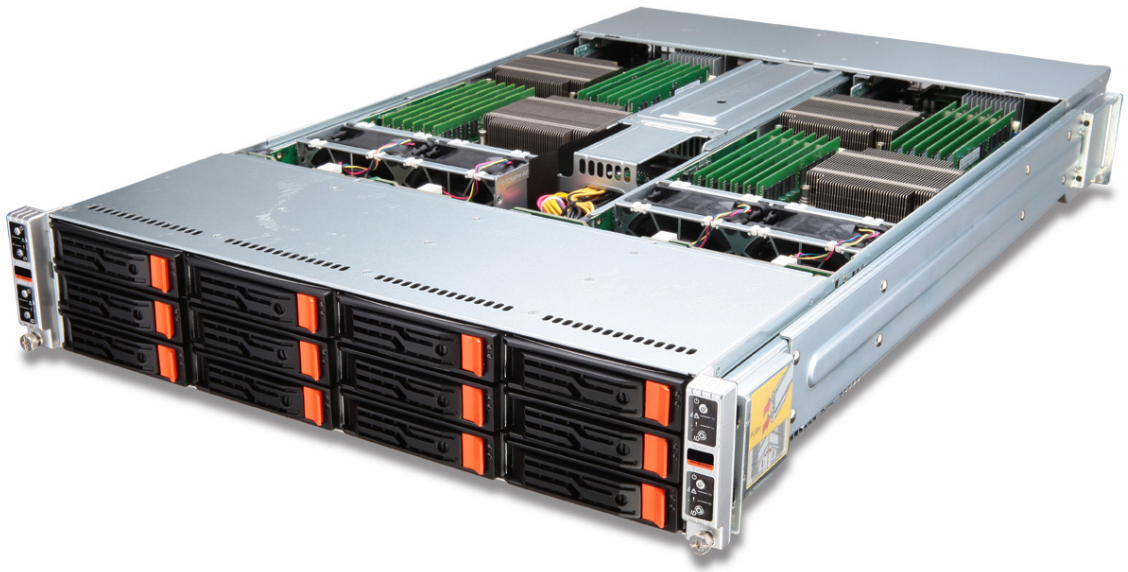
Acer AW2000h w/AW170h/d/q F1 specifications

Product overview

The Acer AW2000h w/ AW170h/d/q F1 maximizes computing power and thermal control with up to four hot-pluggable nodes in a space-saving 2U form factor. Offering first-class performance, innovative technology, high configurability, and comprehensive management features, Acer AW2000h w/ AW170h/d/q F1 servers deliver superb scale-out possibilities to mid markets and high-performance computing (HPC) environments.

Internal view



1 4 independent server nodes in a 2U chassis
2 2 x 1400 W 80 PLUS® gold-level efficient easy-swap power supply
3 4 cooling fans
4 2 x Intel® Xeon® X5600 series processors (per node)
5 12 x DDR3 ECC registered / unbuffered DIMMs (per node)
6 1 x PCIe expansion slots (per node)
7 3 x 3.5” hot-swappable hard drive bays (per node)

Front ports and I/O

1 Power button, ID button, LED indicators (Power, HDD activity, LAN1 status, LAN2 status, ID)

Rear View

Rear I/O (per node)

1 2 x USB ports
2 Management port (RJ-45)
3 Serial port
4 Video port
5 2 x Gigabit LAN port (RJ-45)
6 System ID LED
7 Onboard InfiniBand DDR port (available on AW170hd nodes)
Onboard InfiniBand QDR port (available on AW170hq nodes)

What's New

- New Intel® Xeon® 5600 Series processors
  Intel Xeon X5675, X5672, E5649, E5645, E5607, E5606, E5603
- Hot-pluggable/redundant power supply with 80 PLUS® gold-level efficiency
- Smart Server Manager v1.1 with improved management functionality

Product Specifications (per node)

Processors and chipset

- Up to two Intel Xeon 5500 / 5600 Series processors
- Intel® 5500 / 5520 Chipset

Memory

- Memory capacity:
  - Registered DIMM: 1 / 2 / 4 / 8 GB
  - Unbuffered DIMM: 1 / 2 / 4 GB
- Up to 96 GB, using registered DIMMs when fully populated with 2 DIMMs per channel, 12 slots
- Up to 48 GB, using unbuffered DIMMs when fully populated with 2 DIMMs per channel, 12 slots

Network controllers

- 2 x Integrated Intel 82574L single port Gigabit Ethernet Controller

Storage

- Hard disk form factor: 3.5”

- Type: SATA with hot-plug capability
- 3.5” Maximum capacity:
  - Up to 6 TB SATA HDD (2 TB 3.5" x 3 HDDs)

Storage controllers
- Integrated Intel® ICH10R Serial ATA host controller (six 3 Gb/s SATA ports) with RAID 0, 1, 5 support

Expansion slots
- PCIe® x16 slot

Management
- Acer Smart Server Manager v1.1
- Acer Smart Console
- iBMC management controller, supporting base board management and KVM-over-IP

Deployment/serviceability
- Acer Smart Setup
- BIOS Update Tool
- IPMI Firmware Update Tool

Certified operating systems
- Windows Server® 2008
- Windows Server 2008 R2
- Windows Server 2003 R2
- Red Hat® Enterprise Linux® 5.4
- SUSE® Linux® Enterprise Server 11
- VMware ESXi™ 4
- VMware ESX™ 4

Input/output interface

Front
- Power/Standby LED
- LAN activity LEDs
- ID LED

Rear
- 2 x USB 2.0 ports
- 2 x Gigabit LAN ports (RJ-45)
- Management port (RJ-45)
- Serial (DB-9) port
- Video (DB-15) port
- ID LED
- Optional onboard InfiniBand port (DDR/QDR) (available on select models)

Chassis/form factor
- 2U rack optimized

Power supply
- 2 x 1400 W 80 PLUS® gold-level efficient easy-swap power supply (1+1 redundant, hot-pluggable)
  Note: Redundancy and hot-pluggability is not available on models with fully populated nodes, memory and CPUs. For more details, please contact your local Acer service representative.

Regulatory compliant standards

EMC

- FCC (Class A)
- CE (Class A)
- BSMI (Class A)

Safety

- UL/cUL
- CB
- Nemko/GS

Environmental Specifications

Dimensions	438 (W) x 724 (D) x 88 (H) mm (17.2 x 28.5 x 3.4 inches)	
Weight	Maximum	35 kg (77 lbs.)
	Minimum (includes a single HDD, CPU and RAM, and PSU)	30.9 kg (68 lbs.)
System inlet temperature	Operating	10° - 35° C (50° - 95° F)
	Non-operating	-40° - 70° C (-40° - 158° F)
Relative humidity	Operating	8 - 90 %
	Non-operating	5 - 95 %
Acoustics	Idle	
	LWAd	N/A
	LpAm	52 dBA
	Operating	
	LWAd	N/A
	LpAm	60 dBA
Power	Rated Steady –state power	1400 W
	Maximum Peak Power	1400 W
	BTU rating	~4776.8 BTU/hr at 100 - 240 VAC

Technical specifications

PCIe® specifications

The primary I/O bus for the main board is PCIe Gen2. The following table lists the characteristics of the PCI-E bus segments. Details about each bus segment follow the table.

NOTE: The signaling bit rate of PCI Express is 2.5Gbit/s one direction per lane for Gen 1 and 5.0Gbit/s one direction per lane for Gen 2.

Expansion slot	Number	Type	Bus width[1]	Voltage	Connector	Location	Form factor
PCIe x16	1	PCIe Gen2	x16	3.3V	x16	Riser	Low-profile

NOTE:

1. Indicates the number of physical electrical lanes running to a PCIe® connector.

2. Default bus assignment (in decimal). Inserting cards with PCI™ bridges may alter the actual bus assignment number.

3. Slots are enumerated differently based on the operating system. Microsoft® operating systems enumerate Device ID by bus starting from the lowest bus to the highest.

Onboard storage specifications

Item	Description
Controller	Intel® 82801JR (ICH10R) I/O Controller Hub
Simultaneous drive transfer channels	6 onboard SATA ports
Max throughput per channel	3 Gb/s
Data transfer method	• Non-RAID mode • RAID mode
Drive type supported	Serial ATA
RAID levels support	• RAID 0, 1, 5 (Intel software RAID) • RAID 0, 1 (Adaptec software RAID)
RAID function support	**NOTE**: Intel software RAID only supports Windows OS • Supports multiple logical volumes • Setup through ROM based Array Configuration Utility Installation scripting support
RAID OS support	**NOTE:** This controller does not support LED functions • Windows Server 2008 • Windows Server 2008 R2 • Windows Server 2003 • Red Hat Enterprise Linux 5.4 • SuSE Linux Enterprise Server 11
Additional features	• NCQ (Native Command Queuing) • AHCI (Advanced Host Controller Interface)

Onboard LAN specifications

Item	Description
Controller	2 x Intel® 82574L single port Gigabit Ethernet Controller (2 ports total)
Network interface	10Base-T / 100Base-TX / 1000Base-T
Compatibility standards	• IEEE 802.3 Ethernet interface for 10BASE-T • IEEE 802.3ab Ethernet interface for 1000BASE-T • IEEE 802.3u Ethernet interface for 100BASE-TX
Manageability	• NC-SI, SMBus • PXE, iSCSI boot
Virtualization acceleration	• Intel® I/O Acceleration Technology • Virtual Machine Device Queues (VMDq) • PCI-SIG SR-IOV implementation
Connector	RJ-45
Supported cable type	CAT 5e wire

Onboard InfiniBand specifications

AW170hd F1	DDR InfiniBand speed with IB controller: Mellanox ConnectX, MT25408A0-FCCR-GIS, 20 Gb/s (4X) with 1x QSFP connector.
AW170hq F1	QDR InfiniBand speed with IB controller: Mellanox ConnectX2, MT25418B0-FCCR-QIS 40 Gb/s (4X) with 1x QSFP connector.

Memory specifications and population

Item	Description
Supported memory types	• Registered DDR3 1066 / 1333 MHz • Unbuffered DDR3 1066 / 1333 MHz **NOTE:** Acer does not qualify mixed memory configurations of memory type, capacity or make.
Population	Acer's validated memory populations are listed below. **NOTE**: Support for 8 GB DIMMs may vary by regional availability.

Single processor configuration guide
NOTE: Quad Rank DIMMs and Unbuffered DIMMs can only use a maximum of 6 slots

DIMM #	DIMM 1B	DIMM 1A	DIMM 2B	DIMM2A	DIMM3B	DIMM3A
1		X				
2		X		X		
3		X		X		X
4	X	X	X	X		
6	X	X	X	X	X	X

Dual processor configuration guide

NOTE: Quad Rank DIMMs and Unbuffered DIMMs can only use a maximum of 6 slots per CPU (12 slots total)

DIMM	CPU 1						CPU 2					
#	1B	1A	2B	2A	3B	3A	1B	1A	2B	2A	3B	3A
2		X						X				
3		X		X		X						
4		X		X				X		X		
6		X		X		X		X		X		X
8	X	X	X	X			X	X	X	X		
9	X	X	X	X	X	X		X		X		X
12	X	X	X	X	X	X	X	X	X	X	X	X

* support depends on 8GB DIMM available

Mirroring mode:

- For mirroring mode, the memory contains a primary image and a copy of the primary image. Therefore, the effective size of memory is reduced by at least one-half.
- Follow the population rules described in independent mode.
- Mirroring mode needs the channel 1 & channel 2 with identical DIMM. DIMM slot populations within a channel do not have to be identical but the same DIMM slot location across channel 1 and channel 2 must be the same. DIMM1A and DIMM2A should be the same type, size and manufacturer. DIMM1B and DIMM2B memory should be the same type, size and manufacturer. DIMM1C and DIMM2C memory should be the same type, size and manufacturer.
- Same rule is applied to the CPU2.
- Please refer to the User Guide for complete population for both single and dual processor configurations.

Lockstep mode:

- In Lockstep Channel Mode, each memory access is a 128-bit data access that spans Channel 1 and Channel 2. This is done to support SDDC for DRAM devices with 8-bit wide data ports. The same address is used on both channels such that an address error on any channel is detectable by bad ECC. Lockstep Channel mode is the only RAS mode that supports x8 SDDC.
- Follow the population rules described in independent mode.
- Lockstep mode needs the channel 1 & channel 2 with identical DIMM. DIMM slot populations within a channel do not have to be identical but the same DIMM slot location across channel 1 and channel 2 must be the same. DIMM1A and DIMM2A should be the same type, size and manufacturer. DIMM1B and DIMM2B memory should be the same type, size and manufacturer. DIMM1C and DIMM2C memory should be the same type, size and manufacturer.
- Same rule is applied to the CPU2.
- Please refer to the User Guide for complete population for both single and dual processor configurations.

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Sparing mode:

- In this mode, if system detects degrading memory and system still not crash, the data in failed channel will be copied to spare channel. Failed channel is then isolated and spare channel becomes active. But if any uncorrectable error happens before the isolation, it will still cause the system stop normal operation.
- Follow the population rules described in independent mode.
- Sparing mode need all three channels with identical DIMMs. 1A, 2A and 3A should be the same type, size and manufacturer. 1B, 2B and 3B memory should be the same type, size and manufacturer. Same rule is applied to CPU2.
- Memory sparing mode is only supported by Intel Xeon 5600 series processor. Intel Xeon 5500 series processor **does NOT support the memory sparing mode.**
- Please refer to the User Guide for complete population for both single and dual processor configurations.

Memory Identification

Generally, there are some memory information printed on the label of DIMM, but different vendor may have different format. For example:

4GB 2Rx4 PC3-10600R xx xx xxx

1. Density

- 1GB, 2GB, 4GB, 8GB

2. Rank

- 1R = Single Rank
- 2R = Dual Rank
- 4R = Quad Rank
- Note: if any quad rank DIMM is used, maximum only 2 DIMM per channel can be supported

3. Bit Organization

- This platform supports x4 and x8
- Note: It's not recommend to mix DIMM with different bit organization in one system

4. Speed

- PC3 – 6400 => DDR3- 800
- PC3 – 8500 => DDR3- 1066
- PC3 – 10600 => DDR3- 1333

Power specifications

1400W Power Supply

Operational Input Voltage Range (Vrms)	100 to 240						
Frequency Range (Nominal) (Hz)	60/50						
Nominal Input Voltage (Vrms)	**100**	**120**	**208**	**200**	**220**	**230**	**240**
Max. Rated Output Wattage	1100	1100	1400	1400	1400	1400	1400
Nominal Input Current (A rms)	13.36	11.04	8.01	7.89	7.21	6.88	6.55
Max. Rated Input Wattage Rating (Watts)	1336	1323	1666	1578	1586	1582	1572
Max. Rated VA (Volt-Amp)	1328	1320	1657	1569	1577	1573	1563
Efficiency (%) at Max. Rated Output Wattage	87.16	87.32	88.30	88.62	88.85	89.07	89.93
Power Factor	0.994	0.996	0.995	0.994	0.994	0.994	0.994
Leakage Current (mA)	0.51	0.62	1.03	1.05	1.15	1.20	1.25
Max. Inrush Current (A peak)	17.4	17.5	17.6	17.9	18.1	17.5	17
Max. Inrush Current Duration (mS)	4.70	4.69	4.77	4.72	4.67	4.71	4.75
Max. British Thermal Unit Rating (BTU/hr)	3753.2	3753.2	4776.8	4776.8	4776.8	4776.4	4776.8

Acer server software utilities

Smart Setup 2.X	Easy deployment via the latest version of Acer's Smart Setup. Smart Setup is available both in box as a driver packed installation DVD or a downloadable file to be put into a USB 2.0 device, and eases the deployment of Acer servers for any certified OS. Through its unique interface, users may select to have all the correct drivers be pre-deployed for the OS of their choosing, as well as setup hardware RAID devices, BMC settings (where available), and even clone the pre-settings to a bootable USB device to ease mass server deployments.
Smart Console	Web-based management utility to simplify system management with embedded iBMC, system monitoring and alerting, event handling, remote power control and KVM-over-IP. Smart Console is OS independent and offers virtual media through floppy, ODD, and removable disk.
Smart Server Manager v1.1	Offering 24-7 monitoring for system health and performance. • Delivers proactive event management features including system event logging, event handling from e-mail and SNMP Trap (PET) alerting. • Monitors onboard hardware, operating systems and virtual machines • Allows remote control from KVM and Power control • Satisfies management in web-based UI, role-based administration, and automated management scripts.

Available options (per node)

Processors (up to 2)

Intel® Xeon® processor (Six Core)

X5675 (12 MB L3 cache, 3.06 GHz, DDR3-1333 MHz, 95W)

X5670 (12 MB L3 cache, 2.93 GHz, DDR3-1333 MHz, 95 W)

X5660 (12 MB L3 cache, 2.80 GHz, DDR3-1333 MHz, 95 W)

X5650 (12 MB L3 cache, 2.66 GHz, DDR3-1333 MHz, 95 W)

L5640 (12 MB L3 cache, 2.26 GHz, DDR3-1333 MHz, 60 W)

E5649 (12 MB L3 cache, 2.53 GHz, DDR3-1333 MHz, 80 W)

E5645 (12 MB L3 cache, 2.40 GHz, DDR3-1333 MHz, 80W)

Intel® Xeon® processor (Quad Core)

X5672 (12 MB L3 cache, 3.20 GHz, DDR3-1333 MHz, 95W)

X5667 (12 MB L3 cache, 3.06 GHz, DDR3-1333 MHz, 95 W)

X5570 (8 MB L3 cache, 2.93 GHz, DDR3-1333 MHz, 95 W)

X5560 (8 MB L3 cache, 2.80 GHz, DDR3-1333 MHz, 95 W)

X5550 (8 MB L3 cache, 2.66 GHz, DDR3-1333 MHz, 95 W)

E5640 (12 MB L3 cache, 2.66 GHz, DDR3-1066 MHz, 80 W)

E5630 (12 MB L3 cache, 2.53 GHz, DDR3-1066 MHz, 80 W)

E5620 (12 MB L3 cache, 2.40 GHz, DDR3-1066 MHz, 80 W)

L5630 (12 MB L3 cache, 2.13 GHz, DDR3-1066 MHz, 40 W)

L5609 (12 MB L3 cache, 1.86 GHz, DDR3-1066 MHz, 40 W)

E5607 (8 MB L3 cache, 2.26 GHz, DDR3-1066 MHz, 80 W)

E5606 (8 MB L3 cache, 2.13 GHz, DDR3-1066 MHz, 80 W)

E5603 (4 MB L3 cache, 1.60 GHz, DDR3-1066 MHz, 80 W)

E5540 (8 MB L3 cache, 2.53 GHz, DDR3-1066 MHz, 80 W)

E5530 (8 MB L3 cache, 2.40 GHz, DDR3-1066 MHz, 80 W)

E5520 (8 MB L3 cache, 2.26 GHz, DDR3-1066 MHz, 80 W)

E5506 (4 MB L3 cache, 2.13 GHz, DDR3-800 MHz, 80 W)

E5504 (4 MB L3 cache, 2 GHz, DDR3-800 MHz, 80 W)

L5530 (8 MB L3 cache, 2.40 GHz, DDR3-1066 MHz, 60 W)

L5520 (8 MB L3 cache, 2.26 GHz, DDR3-1066 MHz, 60 W)

L5506 (4 MB L3 cache, 2.13 GHz, DDR3-800 MHz, 60 W)

Intel® Xeon® processor (Dual Core)

E5502 (4 MB L3 cache, 1.86 GHz, DDR3-800 MHz, 80 W)

Memory

Memory type	Registered / Unbuffered DDR3 ECC memory
Capacities	1 / 2 / 4 / 8 GB DIMMs
DIMM number	12
Max memory	96 GB (48 GB unbuffered)

Hard drives

Type	Interface, bandwidth	Capacities (RPM)
Enterprise SATA, 3.5”	3 Gb/s	250 GB (7.2K)
		500 GB (7.2K)
		750 GB (7.2K)
		1 TB (7.2K)
		2 TB (7.2K)

RAID HBA for Tape Drive
Note: LTO tape drives require an add on card for external or internal connectivity

Model	Port number	RAID support
Promise TX4652 SAS HBA	4 internal / 4 external ports	0, 1

Ethernet network cards

Model	Port number	Bandwidth
Intel® Gigabit CT2 desktop adapter	1	10/100/1000 Mbps
Supermicro AOC-SG-i2 server adapter	4	10/100/1000 Mbps
Supermicro AOC-SG-i4 server adapter	4	10/100/1000 Mbps
Supermicro AOC-STGN-i2S server adapter (DA2)*	2	10 Gbps
Intel® X520-SR1 server adapter*	1	10 Gbps
Intel® X520-SR2 server adapter*	2	10 Gbps
Intel® X520-LR1 server adapter*	1	10 Gbps

***Note**: Intel’s 10GbE cards vary in terms or their connecter type. The X520-DA2 is a copper connector for lengths up to 7M, while the X520-SR1/2 is an optical connection for cables up to 550M. The X520-LR1 is for even longer cable lengths up to 10kM.

Fibre Channel HBAs

Model	Port number	Bandwidth
Qlogic® QLE2460	1	4 Gb/s
Qlogic® QLE2462	2	4 Gb/s
Qlogic® QLE2560	1	8 Gb/s
Qlogic® QLE2562	2	8 Gb/s

Tape Backup Unit (TBU)

Model	Tape capacity	Form factor
LTO Ultrium-3, 3Gb/s SAS	400/800 GB	External 1U rack
LTO-4, 3Gb/s SAS	400/800 GB	External 1U rack

TPM module

TPM module with STMicro chip

Service and support

Acer Servers offer a comprehensive service suite to take care of daily IT needs. Users can select the 3-year standard warranty or choose extended warranties and services.

In a continuing effort to improve the quality of our products, information in this document is subject to change without notice. Images shown are only representations of some of the configurations available for this model. Availability may vary depending on region.

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